

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method for creating a two-dimensional geometric object model describing the geometry of an object for use in machine vision inspection, said method comprising:

acquiring a pixel image representation of an object;

generating a set of two-dimensional geometric part models of said object based on said pixel image representation, said two-dimensional geometric part models corresponding to different respective parts of said object, said two-dimensional geometric object model comprising said set of two-dimensional geometric part models;

obtaining a test image containing the visual appearance of said object and a given known inspection measurement associated with the test image;

performing test inspection on said test image using said two-dimensional geometric object model to produce a testing inspection measurement; and

retaining said two-dimensional geometric object model when said given testing inspection measurement deviates from said given known inspection measurement by an amount lower than a predetermined threshold.

Claim 2 (previously presented): The method of claim 1, further comprising:

calibrating an image acquisition system to enable said acquiring to obtain calibrated said pixel image representation of said object; and

specifying one or more constraints for said two-dimensional geometric object prior to said generating to provide additional information constraining said generating.

Claim 3 (original): The method of claim 2, wherein said constraints include the geometric shape of said object.

Claim 4 (original): The method of claim 2, wherein said constraints include the spatial relationship among different parts of said object.

Claim 5 (original): The method of claim 1, said generating further comprising:

determining the dimension of said part of said object; and determining the position of said part of said object.

Claim 6 (previously presented): The method of claim 1, wherein said two-dimensional geometric object model includes geometric descriptions expressed with respect to a coordinate system.

Claim 7 (previously presented): The method of claim 1, said generating further comprising:

- determining a coordinate system with respect to a specified reference; and
- generating said two-dimensional geometric object model with respect to said coordinate system.

Claim 8 (previously presented): The method of claim 1, further comprising:

- refining one or more of said two-dimensional geometric part models;
- configuring a machine vision inspection tool based on said two-dimensional geometric object model;
- evaluating the performance of said two-dimensional geometric object model by evaluating testing inspection measurements in relation to known inspection measurements to produce an indication that said two-dimensional geometric object model is one of satisfactory and unsatisfactory;
- determining when said evaluating produces an indication of unsatisfactory, one or more causes that caused the unsatisfactory indication; and
- deciding an act to which to return for an iteration based on said cause, said act including said generating, said creating, said refining, and said configuring.

Claim 9 (previously presented): A system for creating a two-dimensional geometric object model describing the geometry of an object for use in machine vision inspection, said system comprising:

- an image acquisition system to acquire a pixel image representation of an object;

- a generator to generate two-dimensional geometric part models of said object based on said pixel image representation, said two-dimensional geometric part models corresponding to different respective parts of said object, a said two-dimensional geometric object model comprising said part models;

- an image storage mechanism to store a test image and a given known inspection measurement associated with said test image;

- a testing unit to perform machine vision inspection on said test image using said two-dimensional geometric object model to produce a testing inspection measurement; and

- an object model storage mechanism to retain said two-dimensional geometric object model when said testing inspection measurement deviates from said given known inspection measurement by an amount lower than a predetermined threshold.

Claim 10 (original): The system of claim 9, further comprising:

a calibration unit to calibrate an image acquisition system to enable said calibration unit to obtain calibrated said pixel image representation of said object;
and

a constraint set up unit to specify one or more constraints for said object to provide additional information constraining said generator.

Claim 11 (original): The system of claim 10, wherein said constraints include the geometric shape of said object.

Claim 12 (original): The system of claim 10, wherein said constraints include the spatial relationship among different parts of said object.

Claim 13 (original): The system of claim 9, said generator further comprising:

a first determiner to determine the dimension of said part of said object;
and

a second determiner to determine the position of said part of said object.

Claim 14 (previously presented): The system of claim 9, wherein said two-dimensional geometric object model includes geometric

descriptions expressed with respect to a coordinate system.

Claim 15 (previously presented): The system of claim 9, said generator further comprising:

a determiner to determine a coordinate system with respect to a specified reference; and

a generator to generate said two-dimensional geometric object model with respect to said coordinate system.

Claim 16 (previously presented): The system of claim 9, further comprising:

a refiner to refine one or more of said two-dimensional geometric part models;

a configuration unit that configures a machine vision inspection tool based on said two-dimensional geometric object model; and

an evaluation unit to evaluate the performance of said two-dimensional geometric object model by evaluating testing inspection measurement in relation to known inspection measurement to produce an indication that said two-dimensional geometric object model is one of satisfactory and unsatisfactory;

a determiner to determine when said evaluation unit yields an indication of unsatisfactory, one or more causes that caused the unsatisfactory indication; and

a decider to decide an act to which to return for an iteration based on said cause, said act including steps performed by said generator, by said creator, by said refiner, and by said configuration unit.

Claim 17 (previously presented): A medium having information recorded thereon, such that when said information is read and executed by a computer, the computer is caused to:

acquire a pixel image representation of an object;

generate two-dimensional geometric part models of an object based on said pixel image representation, said two-dimensional geometric part models corresponding to different respective parts of said object, said two-dimensional geometric object model comprising said two-dimensional geometric part models;

obtain a test image, containing the visual appearance of said object, and a given known inspection measurement associated with said test image;

perform test inspection on said test image using said two-dimensional geometric object model to produce a testing inspection measurement; and

retain said two-dimensional geometric object model when said test inspection measurement deviates from said given known inspection measurement by an amount lower than a predetermined threshold.

Claim 18 (original): The medium of claim 17, said information recorded on said medium further causes said computer to:

calibrate an image acquisition system to enable said acquiring to obtain calibrated said pixel image representation of said object; and

specify one or more constraints for said object prior to said generating to provide additional information constraining said generating.

Claim 19 (original): The medium of claim 18, wherein said constraints include the geometric shape of said object.

Claim 20 (original): The medium of claim 18, wherein said constraints include the spatial relationship among different parts of said object.

Claim 21 (original): The medium of claim 17, wherein said information recorded on said medium further causes said computer to:

determine the dimension of said part of said object; and
determine the position of said part of said object.

Claim 22 (previously presented): The medium of claim 17, wherein said two-dimensional geometric object model includes geometric descriptions expressed with respect to a coordinate system.

Claim 23 (previously presented): The medium of claim 17, wherein said information recorded on said medium further causes said computer to:

determine a coordinate system with respect to a specified reference; and
generate said two-dimensional geometric object model with respect to said coordinate system.

Claim 24 (previously presented): The medium of claim 17, said information recorded on said medium further causes said computer to:

refine one or more of said two-dimensional geometric part models;

configure a machine vision inspection tool based on said two-dimensional geometric object model;

evaluate the performance of said two-dimensional geometric object model by evaluating testing inspection measurement in relation to known inspection measurement to produce an indication that said object model is one of satisfactory and unsatisfactory;

determine when said evaluating produces an indication of unsatisfactory, one or more causes that caused the unsatisfactory indication; and

decide an act to which to return for an iteration based on said cause, said act including said generating, said creating, said refining, and said configuring.